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10/614,188	07/08/2003	Richard L. Sutherland	SAIC0078	7745

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EXAMINER	
SLOMSKI, REBECCA	

ART UNIT	PAPER NUMBER
2877	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,188	SUTHERLAND ET AL.	
	Examiner	Art Unit	
	REBECCA C. SLOMSKI	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 07/29/08.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-13,15-34 and 39-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-13,15-34 and 39-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Detection and Identification of Biological Agents with Three Bragg Grating Filters.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **1, 4-13** and **15-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Murpher et al (US 5,864,641) in view of Herron et al. (US 2001/0030741) and further in view of Sailor (US 2003/0146109)

2. With respect to claim **1,** Murphy et al. discloses an optical fiber long period sensor comprising:

- Obtaining a first sample from the environment and introducing the first sample to at least one detection module (Col.6, L 66-67, L 36-38, sample = chemical or biological agent, detection module = reactive coating on exposed active sites)
- Filtering the first sample through at least a first filter (Col.6, L 66-67)
- The first filter is a grating and contains at least one detection molecule for binding the target agent thereto (Col.6, L 33-51)
- Measuring optical property of the first filter after filtering the first sample there through (Col.7, L 5-12)

However, Murphy et al. fails to disclose a second filter without detection molecules, comparing the first filter measurements to the second, a third filter, comparing the first and second filter measurements to the third filter and that the first, second and third filters are porous Bragg gratings.

Herron discloses a diagnostic device and method comprising:

- Introducing the first sample to at least one detection module (P.0040)
- Filtering the first sample through at least a first and second detection well, the first well contains at least one detection molecule for binding the target agent thereto and the second filter contains no detection molecules for binding the target agent thereto (P.0039)
- Measuring an optical property of the first well and the second well after filtering the first sample therethrough (P.0039)
- Comparing the measured property of the first well to the measured optical property of the second well to determine a presence of a target agent (P.0039)
- Measuring an optical property of a third well which is not exposed to the first sample (P.0039)
- Comparing the measured property of the third well to the measured optical property of the first and second well to determine a presence of spurious signals caused by the environment (P.0039)

Sailor et al discloses a porous thing film time-varying reflectivity analysis comprising:

- The filter is a porous Bragg grating (P.0021)

It would have been obvious to one of ordinary skill in the art to use the multiple measurements of Herron for increased accuracy due to the cancellation of effects that are common to the paths such as light intensity and other environmental effects. (Herron, P.0039)

Additionally, it would have been obvious to use the porous Bragg grating of Sailor et al. since the porous film allows for detection of a range of molecule sizes and is simple yet sensitive. (Sailor et al., P.0012)

3. With respect to claim **10**, Murphy et al. discloses an optical fiber long period sensor comprising:

- A collector system for collecting the sample from an environment (Figure 4, tubing from test tube sample holder)
- A transfer system for adding the sample to a working fluid (Col.1, L 27-29)
- A dispenser system for introducing the working fluid including the sample to a detector system (Col.6, L12-14, L 66-67)
- A detector system comprising at least a first optical grating, wherein the first optical grating contains at least one detector molecule for binding the at least one target agent thereto (Col.6, L 33-51, 66-67)
- A measuring device for measuring an optical response of the first optical grating after contact with the working fluid, including the sample (Col.7, L 5-12)

However, Murphy et al. fails to disclose a second filter without detection molecules, comparing the first filter measurements to the second, a third filter, comparing the first and second filter measurements to the third filter and that the first, second and third filters are porous Bragg gratings.

Herron discloses a diagnostic device and method comprising:

- A collector system for collecting the sample from an environment (P.0044, syringe pump)

- A detector system comprising at least one detector module that includes a first, second and third detection optical well, the first optical well contains at least one detection molecule for binding the target agent thereto and the second filter contains no detection molecules for binding the target agent thereto, the third optical well being isolated and not in contact with the working fluid (P.0039)
- Measuring an optical response of the first optical well and the second optical well after contact with the working fluid, including the sample (P.0039)
- Measuring an optical property of a third well which is not exposed to the first sample (P.0039)
- Comparing the measured property of the first optical well to the measured optical property of the second optical well to determine a presence of a target agent (P.0039) and comparing the measured property of the third well to the measured optical property of the first and second well to determine a presence of spurious signals caused by surroundings of the sensor (P.0039)

Sailor et al discloses a porous thing film time-varying reflectivity analysis comprising:

- The filter is a porous Bragg grating (P.0021)

It would have been obvious to one of ordinary skill in the art to use the multiple measurements of Herron for increased accuracy due to the ability to cancel effects that are common to the sample paths such as light intensity and other environmental effects. (Herron, P.0039)

Additionally, it would have been obvious to use the porous Bragg grating of Sailor et al. since the porous film allows for detection of a range of molecule sizes and is simple yet sensitive. (Sailor et al., P.0012)

4. With respect to claims **4** and **15**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 1 and 10 above.

However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose forming the gratings by holographically polymerizing a polymer-dispersed liquid crystal material. It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to holographically polymerize a polymer-dispersed liquid crystal material since it was well known in the art to form a grating in this manner (see Domash et al. Col.4, L 13-27 for example and admitted prior art on page 23, paragraph [0083].)

5. With respect to claim **5**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 1 above.

However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose the grating is fabricated for apodization. It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to use the grating for apodization since it was well known in the art to use apodization for combining two optical paths (i.e. first and second filter) (see Domash et al. Col.6, L 9-15 for example) Additionally, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be used, if the actual use is not part of the claimed method in which the apparatus is employed does not differentiate the claimed apparatus from prior art.

6. With respect to claim **6**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 1 above.

Additionally, Murphy et al. discloses:

- A working fluid (sample) with an added sample (specific biological agents) and introducing it to the at least one detection module (Col.1, L 26-29 and Col.6, L 66-67)

7. With respect to claim 7, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 1 and 6 above. However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose recirculating the working fluid to obtain a second sample from the environment.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to recirculate the fluid since doing so would minimize the amount of the sample fluid needed for the detection.

8. With respect to claim **8**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 1 above.

Additionally, Murphy et al. discloses:

- Measuring the optical property of the first filter includes determining a refractive index of the first filter (Col.1, L 66- Col.2, L 5)

However, Murphy et al. fails to disclose determining the change in the refractive index of the second filter but for reasons stated above, this would be obvious since using a second filter as a reference ins well known in the art and it would be understood that whatever measurements are carried out on the first filter need to be duplicated on the second filter.

9. With respect to claim **9**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 1 above.

However, Murphy et al. fails to disclose storing data of the measured properties indicative of the presence of the target agent.

It would have been obvious to one of ordinary skill in the art to store the data measured since it is well known in the art and storing the data would put it in a usable form for future use. (Example see Sailor et al. P.0017)

10. With respect to claim **11**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 10 above.

However, Murphy et al. fails to disclose a data storage system for storing data indicative of the presence of the at least one target agent. *** see below

It would have been obvious to one of ordinary skill in the art to store the data measured since it is well known in the art and storing the data would put it in a usable form for future use. (For example see Sailor et al. P.0017)

11. With respect to claim **12**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 10 and 11 above. *** see below

However, Murphy et al. fails to disclose a transmission system for transmitting data indicative of the presence of at least one target agent to an analysis location.

It would have been obvious to one of ordinary skill in the art to transmit the data to an analysis location since it is well known in the art that analysis would enable the data to be in a usable form for future use. (For example see Sailor et al. P.0016)

12. With respect to claim **13**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 10 above. However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose recirculating the working fluid to obtain a second sample from the environment.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to recirculate the fluid since doing so would minimize the amount of the sample fluid needed for the detection.

13. With respect to claim **16**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 1 above.

However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose prior to holographic polymerization the polymer dispersed liquid crystal material comprises a number of specific elements. It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to holographically polymerize a polymer-dispersed liquid crystal material from these specific elements since it was well known in the art to form a grating in this manner (see Domash et al. Col.4, L 13-27 for example and admitted prior art on page 23, paragraph [0083].)

14. With respect to claim **17**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 10 above. However, Murphy et al. in view of Herron et al. and Sailor et al. fail to disclose the measuring devices are photodetectors.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived that the measuring devices are photodetectors rather than the sensors named by Murphy et al. since photodetectors are art recognized equivalents to optical sensors.

15. With respect to claim **18**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 10 above.

Additionally, Murphy et al. discloses:

- A first inlet reservoir integrally connected to a mirco-fluidic channel to provide the sample to the optical grating (Figure 4)

However, Murphy et al. fails to disclose a second inlet reservoir. *** see below

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to have a second reservoir integrally connected to a second micro-fluidic channel for providing the working fluid to a second optical grating as disclosed above with respect to Herron et al..

16. With respect to claim **19**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 10 above.

Additionally, Murphy et al. discloses:

- A light source optically coupled to a waveguide for providing light to the at least a first optical grating and the at least a second optical grating (Figure 4)

17. With respect to claim **20**, Murphy et al. discloses an optical fiber long period sensor comprising:

- A first inlet reservoir for receiving a working fluid containing the sample therein (Figure 4, tube labeled "sample, wash, and regenerative solution")
- A first micro-fluidic channel integrally connected to the first inlet reservoir (Figure 4, unlabeled shaded line between tube and contacting chamber)
- A first optical grating physically integrated with the first micro-fluidic channel, wherein the first optical grating includes at least one detector molecule for binding the target agent within the sample thereto (Col.6, L 33-51, 66-67)

However, Murphy et al. fails to disclose a second inlet reservoir, a second micro-fluidic channel, a second optical grating without detection molecules, a third optical grating isolated from the working fluid and at least one reservoir physically integrated with the first and second micro-fluidic channels for removing the working fluid containing the sample and that the filters are porous Bragg gratings. *** see below

Herron discloses a diagnostic device and method comprising:

- A first and second inlet reservoir for receiving a working fluid containing the sample therein (P.0039, wells)
- A first micro-fluidic channel integrally connected to the first inlet reservoir (P.0040)

- A second micro-fluidic channel integrally connected to the second inlet reservoir (P.0040)
- A first inlet reservoir contains at least one detector molecule for binding the target agent within the sample thereto (P.0039, unknown test sample)
- The second inlet reservoir does not include a detector molecule for binding the target agent within the sample thereto (P.0039, no analyte control)
- A third optical well which is isolated from the working fluid (P.0039, at least one known calibration analyte sample)
- At least one outlet reservoir physically integrated with the first and second micro-fluidic channels for removing the working fluid containing the sample from the detector module (P.0040)

Sailor et al discloses a porous thing film time-varying reflectivity analysis comprising:

- The filter is a porous Bragg grating (P.0021)

It would have been obvious to one of ordinary skill in the art to use the multiple inlet reservoirs of Herron for increased accuracy due to the ability to cancel effects that are common to the sample paths such as light intensity and other environmental effects. (Herron, P.0039) Additionally, it would be understood that fluid channels would be required for each sample reservoir in order to move the sample into and out of the reservoir in any easy manner while the reservoirs remain attached in the system to save time for switching between samples.

Additionally, it would have been obvious to use the porous Bragg grating of Sailor et al. since the porous film allows for detection of a range of molecule sizes and is simple yet sensitive. (Sailor et al., P.0012)

18. With respect to claims **21, 22**, and **23**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 20 above. However, Murphy et al. fails to

disclose a substrate formed on a first material and the other parts formed on a second material.

Sailor et al. discloses porous thin film time varying reflectivity analysis comprising:

- A substrate formed on a first material/silicon (P.0023, silicon)
- A second material/silicon dioxide formed on at least part of the substrate, wherein the first optical grating are formed in the second material (P.0023, silicon is oxidized to form gratings (pores))

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to form the optical long period sensor of Murphy et al. out of two materials as in Sailor et al. since different properties are beneficial for the functions of the substrate and the gratings, yet by having them formed from the same piece of original material allows them to be inherently connected, avoiding possible assembly error.

Additionally, it would have been obvious to one of ordinary skill of the art to form the inlet, micro-fluidic channels, and outlet reservoir from the same material since they should understandably be located in proximity to the grating and need to be connected thereto. By forming them of the same piece of material as the gratings, accuracy is preserved, avoiding possibly assembly error.

19. With respect to claim **24**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 20 and 21 above.

Additionally, Murphy et al. discloses:

- A waveguide formed of a third material and optically integrated with the first optical grating (Col.7, L 49-63)

20. With respect to claim **25** and **33**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 20, 21, 24 and 30 above.

However, Murphy et al. fails to disclose the third material is silicon oxynitride.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to use silicon oxynitride for the waveguide since it has been held to be within the general skill of a worker in an art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

21. With respect to claims **26** and **27**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 20, 21 and 24 above.

Additionally, Murphy et al. discloses:

- Waveguide is optically integrated with the at least first optical grating (Figure 4, waveguide = optical fiber, optical grating = coated lpg sensing element)
- A light source optically coupled to the waveguide (Figure 4, light source = broadband source, waveguide = optical fiber)
- A first detector located in an optical path of the waveguide and an optical path of the first optical grating (Figure 4, photodetector = optical spectrum analyzer)

Herron discloses a diagnostic device comprising:

- The waveguide is split into a first arm that is optically integrated with the at least first optical grating and a second arm that is optically integrated with the second optical grating (P.0039, single waveguide, two separate reservoirs 102, 104, 106, Figure 1)
- A first and second photodetector located in the optical path of the waveguide and an optical path of the first and second optical reservoirs (P.0078, P.0079, array of detectors for each well)

It would have been obvious to one of ordinary skill in the art that the optical spectrum analyzer of Murphy et al. is an art recognized equivalent to a photodetector.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to split the waveguide into the two separate measurement channels as disclosed by Herron in order to provide reference channels as described above with respect to claim 1.

Additionally, it would have been obvious to have a photodetector for each reservoir in order to measure the separate responses and be able to compare them for results so as not to complicate the apparatus with additional optics or misalignment trouble. (Herron, P.0079)

22. With respect to claim **28**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 20, 21, 24 and 26 above.

However, Murphy et al. fails to disclose a third optical grating located in a third arm of the waveguide, wherein the third optical grating does not contact the sample.

Herron discloses a diagnostic device comprising:

- A third optical well located in a third arm of the waveguide , wherein the third optical grating does not contact the sample (P.0039, known analyte sample)

It would have been obvious to one of ordinary skill in the art to include the third optical measurement of Herron in the apparatus of Murphy as discussed above with respect to claim 1, since a reference of already known substance unaffected by the sample would provide a control for subtracting effects of the environment. (P.0039)

23. With respect to claim **29**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 20, 21, 24 and 26 above.

However, Murphy et al. fails to disclose the materials that comprise the optical gratings before holographic polymerization.

It would have been obvious to one of ordinary skill in the art to have these certain materials comprising the optical grating before holographic polymerization since it has been held to be

within the general skill of a worker in the art to select a known material on the bases of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

24. With respect to claims **30, 31,** and **32**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 20 above.

Additionally, Murphy et al. discloses:

- A substrate formed of a first material (first material = fiber optic waveguide, 10)
- A second material formed on at least part of the substrate having a waveguide formed therein of a third material (second material = cladding 30, third material = core 20)
- A fourth material formed on at least part of the second material wherein the first micro-fluidic channel and the first optical grating, are formed in the fourth material (Figure 1, micro-fluidic channel = core 20, grating, 40)

However, Murphy et al. fails to disclose the inlet reservoir, the second micro-fluidic channel, the second optical grating, and the outlet reservoir formed in the fourth material. Additionally, Murphy et al. fails to disclose the specific materials.

Sailor et al. discloses porous thin film time varying reflectivity analysis comprising:

- A substrate formed on a first material/silicon (P.0023, silicon)
- A second material/silicon dioxide formed on at least part of the substrate, (P.0023, silicon is oxidized)

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to form the inlet reservoir, the second micro-fluidic channel, the second optical grating and the outlet reservoir from the same material as the first micro-fluidic channel and the first optical grating since a reference channel necessitates that everything be the same with the sample channel, down to the material with which its made in order to be accurate, and it is

understood that the inlet and outlet should be in proximity to the grating so therefore forming it from the same material makes it inherently connected, avoiding possible assembly error.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to use silicon oxynitride for the third material and polymer for the fourth material since it has been held to be within the general skill of a worker in an art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

25. With respect to claims **34**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claim 30 above.

However, Murphy et al. fails to disclose the fourth material is a polymer.

Sailor et al. discloses porous thin film time varying reflectivity analysis comprising:

- A substrate formed on a first material/silicon (P.0023, silicon)
- A second material/silicon dioxide formed on at least part of the substrate, (P.0023, silicon is oxidized)

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to form the inlet reservoir, the second micro-fluidic channel, the second optical grating and the outlet reservoir from the same material as the first micro-fluidic channel and the first optical grating since a reference channel necessitates that everything be the same with the sample channel, down to the material with which its made in order to be accurate, and it is understood that the inlet and outlet should be in proximity to the grating so therefore forming it from the same material makes it inherently connected, avoiding possible assembly error.

It would have been obvious to one of ordinary skill in the art at the time the invention was conceived to use silicon oxynitride for the third material and polymer for the fourth material since it has been held to be within the general skill of a worker in an art to select a known

material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Additionally, it is well known in the art to comprise waveguides from polymers due to the low loss capabilities as evidenced by Bach et al. US Publication 2003002778.

26. With respect to claims **39, 40, 41 and 42**, Murphy et al. in view of Herron et al. and Sailor et al. discloses all of the limitations as applied to claims 1, 10, and 20 above.

However, Murphy et al. fails to disclose the third optical grating is used to determine a presence of spurious signals caused by the environment comprising fluctuations due to one of thermal drift of one of the filters and light sources changes.

Herron discloses a diagnostic device comprising:

- Spurious signals comprise fluctuations due to light source changes (P.0039)

It would have been obvious to one of ordinary skill in the art at the time of the invention that the third optical grating, for reference measurement without the sample, would determine the presence of spurious signals caused by the environment since this is well known in the art as a method for referencing. The first two filters account for spurious signals caused by the binding, however, the third filter is for reference, to select a baseline signal. This baseline signal would result in being able to calculate out things such as ambient light and room temperature effects (Herron, P.0039).

***It should be noted that the functional recitations in the above claims do not hold any patentable weight because they are in narrative form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth 35 USC 112 6th paragraph and must be supported by recitation in the claim of sufficient

structure to warrant the presence of the functional language. In re Fuller, 1929 C.D. 172; 388 O.G. 279. The functional recitations are as follows:

- "a collector system for collecting the sample from an environment" (Claim 10)
- "a transfer system for adding the sample to a working fluid" (Claim 10)
- "a dispenser system for introducing the working fluid to a detector system" (Claim 10)
- "at least one detector molecule for binding the target agent" (Claim 10)
- "a first measuring device for measuring an optical response" (Claim 10)
- "a second measuring device for measuring an optical response" (Claim 10)
- "a third measuring device for measuring an optical response of the third optical grating" (Claim 10)
- "a processor for comparing the measured optical response... to determine the presence of the at least one target agent" (Claim 10)
- "a data storage system for storing data indicative of the presence of the at least one target agent" (Claim 11)
- "a transmission system for transmitting the data indicative of the presence of the at least one target agent" (Claim 12)
- "a recirculation system for receiving the working fluid... and removing the sample therefrom..." (Claim 13)
- "a first micro-fluidic channel for providing the working fluid...." (claim 18)
- "a second micro-fluidic channel for providing the working fluid..." (claim 18)
- "a light source...for providing light to the at least a first optical grating..." (claim 19)
- "a... reservoir for receiving a working fluid ...therein" (Claim 20)
- "at least one detector molecule for binding the target agent" (Claim 20)

- "at least one reservoir...for removing the working fluid containing the sample in order to re-use the working fluid with another sample" (Claim 20)

Response to Arguments

Applicant's arguments, see pages 10-12, filed 07/29/08, with respect to the rejection(s) of claim(s) 1, 4-13, 15-34, and 39-42 under 35 U.S.C 103(a) unpatentable over Murphy in view of Sailor in view of Ridgway have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Murphy et al. in view of Herron et al. and Sailor et al. as described above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA C. SLOMSKI whose telephone number is (571)272-9787. The examiner can normally be reached on Monday through Thursday, 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/L. G. Lauchman/
Primary Examiner, Art Unit 2877

Rebecca C. Slomski
Patent Examiner

rcs